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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:	Steven R. Bard	Art Unit:	2857
Serial No.:	09/619,219	Examiner:	Manuel Barbee
Filed:	July 19, 2000		
For:	Providing Power From A Power Source To A Power Sink	Atty Docket:	ITL.0417US P9042

#8

2/12 MSH

Board of Patent Appeals & Interferences
Commissioner for Patents
Washington, D.C. 20231

APPEAL BRIEF

Sir:

Applicant respectfully appeals from the final rejection mailed October 11, 2002.

I. REAL PARTY IN INTEREST

The real party in interest is the assignee Intel Corporation.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-3, 6-13, and 15-30 are rejected. Each rejection is appealed.

Date of Deposit: January 13, 2003
I hereby certify under 37 CFR 1.8(a) that this correspondence is being deposited with the United States Postal Service as **first class mail** with sufficient postage on the date indicated above and is addressed to the Commissioner for Patents, Washington, DC 20231.
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IV. STATUS OF AMENDMENTS

All amendments were entered.

V. SUMMARY OF THE INVENTION

A system 10 may include a power source 12 and the power sink 14 coupled by a power supplying link or connection 16b and a communication link 16a, as shown in Figure 1. The source 12 may supply power over the link 16b and may exchange information with the sink 14 over the link 16a.

A power source is any device capable of providing a source of power to a power sink. A power source may be fixed in that it supplies a specific voltage level at a specific amperage level. A power source may be dynamic in that it has the capability of altering either or both of its voltage level or current capacity. A power sink is any device that consumes energy provided by a power source. A physical connection between the power source and the power sink includes a delivery mechanism for power to the sink and a communication medium between the two.

In a loosely coupled connection between the sink 14 and the source 12, the source 12 may provide a specific signal to the sink 14 for example through a reserved pin on a link 16a. The sink 14, upon detecting the signal, may determine that it may charge its internal battery from the power available from the source 12. See specification at page 2, line 18 through page 3, line 16.

In a tightly coupled system, more complex communications may be possible between the source 12 and the sink 14. In such case, a communication protocol implemented by firmware or software residing on the sink 14 may make certain decisions about the amount and use of power provided by the source 12. In one embodiment, the sink 14 may determine whether the source 12 is a valid source from which the sink 14 may charge its internal battery. Thus, a tightly

coupled connection between the sink 14 and source 12 may utilize a higher level of communication over the link 16a. However, a higher level of communication may not be necessary for the sink 14 to detect that the source 12 is a device from which the sink 14 may charge its internal battery. A lower level of detection may be used for this purpose, such as the loosely coupled connection described previously.

Referring next to Figure 2, not only may a tightly or loosely coupled connection be implemented between the source 12a and the sink 14a, but moreover, a given source 12a may provide power to a plurality of sinks. Thus, in the example shown in Figure 2, the source 12a may be an AC adapter and the sink 14 may be a mobile computer system 14a. A link 16 with plugs 24 and sockets 22 provides connections between the sink 14a and the source 12a. Particularly, a plug 24a plugs into a socket 22a on the sink 14a and a plug 24b plugs into a socket 22b on the source 12a. The source 12a is coupled to a source of AC power indicated at 18.

A fan out unit 30 may receive the plug 24b in its socket 22b. However, the fan out unit 30 may also supply power through a plurality of sockets 32, 34 and 36, each capable of communicating with an additional power sink (not shown). Thus, in one example, the source 12a may power both the sink 14a and other related devices such as a cellular phone, a printer, a display device, and the like.

The source 12a may determine seriatim for each connected sink whether the source 12a has the available power resources to supply the power needs of each subsequently coupled sink. Each time a new sink is connected, the source 12a may undertake a communication protocol with the coupled sink to establish what its power needs are and to determine whether the source 12a can meet those power needs. See specification at page 3, line 17 through page 5, line 8.

In one embodiment of the present invention, the source 12a may be implemented in accordance with the IEEE 1394b standard, preliminary draft P1394b, Revision 1.0, dated February 25, 2000 available from the Institute of Electrical and Electronics Engineers (IEEE), Inc., 35 E. 47th Street, New York, New York 10017. In addition, a 1394b beta socket, plug pair may be utilized, since an extra pin is available in these socket/plug pairs.

The source 12a may be a fan out physical layer or FOP. A FOP is a multi-ported physical layer that is attached to a physical layer integrated with a link layer (PIL) via a serial interface. A physical layer is a serial bus protocol layer that translates logical symbols used by the link layer into electrical signals on a serial bus medium. The physical layer is self-initializing. Physical layer arbitration guarantees that only one node at a time is sending data.

A link layer is the serial bus protocol layer that provides confirmed and unconfirmed transmission or reception of primary packets. A primary packet is any packet that is not an acknowledgement or a physical layer packet. A primary packet is an integral number of quadlets and contains a transaction code in the first quadlet. A quadlet is four bytes or thirty-two bits of data.

Thus, the sink 14a may include a 1394b physical layer integrated within a link (PIL). A PIL is a link that uses a modified beta port to attach to a FOP using the protocol defined in the 1394b standard. A beta port is a port that operates according to the specifications of the IEEE 1394b standard. See specification at page 5, line 9 through page 6, line 14.

A self-ID packet is a physical layer packet that provides information about a device that transmits the self-ID packet including, for example, the device's identity, its location and its power requirements. A self-ID packet is provided, for example, from the sink 14a to the source

12a. If the source 12a includes a processor-based system such as a controller in its FOP 30, the source 12a may determine whether or not to provide the requested power.

For example, under the 1394b protocol, a primary power provider is a node that reports its power class as either one, two or three in its first self-ID packet. This type of device provides fifteen, thirty or forty-five watts to the power connection 16b. Thus, a serial bus connection may be provided between the PIL (sink 14a) and the FOP (source 12a) in which the FOP selectively supplies up to four coupled sinks. The FOP may provide power according to a pre-established routine. However, other non-1394b embodiments may also be used.

Referring to Figure 3, in one embodiment, the software or firmware 40 for implementing the source 12 begins by receiving the self-ID packet from a given requesting sink 14, as indicated in block 42. The source 12 may include a processor-based system such as a microcontroller, an embedded controller or a processor. At this stage, the source 12 may also have one or more connected sinks 14. As indicated in block 46, the source 12 may then receive a power class request from the sink 14. A given sink may request a power class, in accordance with one embodiment of the present invention, as indicated in block 44. This request may be in the form of a specific request for a given power class, in terms of voltage and current for example. Alternatively, the request may be simply an identifier which identifies the sink 14. The source 12 may then make a determination, based on the identifier for the sink 14, about what power class the sink needs. See specification at page 6, line 15 through page 7, line 23.

If the power class requested by the sink 14 is acceptable, given the available resources of the source 12, as determined in diamond 48, the sink 14 may be given an acknowledge signal indicating that the sink 14 may receive power from the source 12, as indicated in block 50. In one case, the power class requested from the sink 14 may be such that it enables the sink 14 to

receive sufficient power to charge its battery. In other cases, the sink 14 may be acknowledged for its ongoing power needs but the source 12 may be unable to supply sufficient power to enable the sink 14 to charge its battery. If the needed power class is unavailable from the source 12, for example because of the capabilities of the source 12 or the number of power consuming sinks already coupled to the source 12, the source 12 may reject the sink as indicated in block 52.

In each case, in accordance for example with the 1394b protocol, any coupled sink 14 receives sufficient power for enumeration. Thus, the protocol indicated in Figure 3 may be accomplished with power supplied from the source 12 or from an available link 16 regardless of whether the source 12 ultimately can supply the ongoing working power needs of a given sink 14.

Referring next to Figure 4, the software 60 resident on a processor-based sink 14, begins by sending a self-ID packet as indicated in block 62 in one embodiment of the invention. The present invention is not in any way limited to the 1394b protocol. In general, a self-ID packet may be a non-1394b identifier or may be the self-ID packet described in the 1394b protocol.

The sink 14 then receives a power class request from the source 12 as indicated in block 64. The sink 14 may send its power class request as indicated in block 66. When the sink 14 receives a power decision from the source 12, as indicated in block 68, the sink 14 determines whether the decision is to reject or accept the sink 14 as determined at diamond 70. If the sink 14 is not rejected, the sink 14 continues to operate through the source 12 as indicated in block 72. See specification at page 7, line 24 through page 9, line 9.

VI. ISSUES

A. Is Claim 1 Obvious Over Oprescu By Itself?

B. Is Claim 3 Obvious Over Oprescu Taken Alone?

VII. GROUPING OF THE CLAIMS

For convenience on appeal, claims 2, 6-12, and 15-29 may be grouped with claim 1 and claims 13 and 29 may be grouped with claim 3.

VIII. ARGUMENT

A. Is Claim 1 Obvious Over Oprescu By Itself?

Claim 1 has been rejected as obvious over a single reference. A number of additional references are discussed in the response to arguments, but it is understood that none of these references are relied upon.

Claim 1 calls for a method including detecting the coupling of a power sink to a power source. Power class indication is automatically requested from the sink. The power class indication is used to determine whether to supply power to the sink.

The gist of the argument seems to be that because it is known to provide communications between different devices over a bus, it would be obvious to communicate the specific "power class" indication claimed. But, of course, this begs the obviousness question. The invention is realizing the benefit of obtaining the specific information claimed, not in actually being able to cause information of any type to be communicated.

Since no reference of record in any way suggests providing power class information in particular, the single reference Section 103 rejection most certainly fails to make out a *prima*

facie case. This must be because there is no reference that teaches any reason to modify the only cited reference to obtain power class information in particular.

As pointed out in the office action in paragraph 6, Oprescu does not teach requesting power class information from the sinks. The Examiner contends that it would be obvious to one of ordinary skill in the art to modify the power manager taught by Oprescu to request power class information. The alleged rationale to modify is that "because then the power manager would control the time when data is received, therefore it is receiving information from two components simultaneously." This asserted rationale to modify Oprescu is essentially nowhere derived from Oprescu himself. Instead, it is the result of hindsight reasoning. Plainly, the rationale is that because doing what is claimed would be better, Oprescu would be wise to do so.

However, as explained in the Manual of Patent Examining Procedure, it is incumbent upon the Examiner to demonstrate, from within the prior art itself, the rationale to modify. See M.P.E.P. § 2143.01 "The Prior Art must suggest the desirability of the claimed invention." The Examiner cannot supply the rationale to modify, having learned of its desirability as a result of reviewing the claimed invention. In other words, an objective indication of the rationale to modify must come from within the prior art, not from the Examiner having been aided by seeing the applicant's solution.

Therefore the rejection of claim 1 should be reversed.

B. Is Claim 3 Obvious Over Oprescu Taken Alone?

Claim 3 is dependent on claim 1. Claim 3 calls for wherein detecting the coupling of a power sink to a power source includes receiving a self-identifier packet at the source from the sink.

However, there is nothing in the material in Oprescu relied by the Examiner to substantiate the argument that Oprescu obtains a self-identifier packet from the sink.

Therefore, the rejection of claim 3 should be reversed.

IX. CONCLUSION

Applicant respectfully requests that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

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APPENDIX OF CLAIMS

The claims on appeal are:

1. A method comprising:

detecting the coupling of a power sink to a power source;

automatically requesting a power class indication from the sink; and

using said power class indication to determine whether to supply power to said sink.

2. The method of claim 1 including detecting the coupling of a plurality of power sinks to the power source and sending the data signal between the source and each sink to determine whether the source can provide power to each sink.

3. The method of claim 1 wherein detecting the coupling of a power sink to a power source includes receiving a self-identifier packet at the source from the sink.

6. The method of claim 2 including determining the available power of the source based on the power requirements of a particular sink.

7. The method of claim 2 including determining whether to supply power to a given sink based on the power requirements of any sinks already coupled to said source and the power capacity of said source.

8. The method of claim 2 including supplying sufficient power for enumeration to a sink coupled to said source.

9. The method of claim 8 wherein if the source is unable to supply power to the sink, refusing to supply power to said sink except for enumeration.

10. The method of claim 1 including sending an identifier to said source that is used by the source to determine whether the source can supply power to said sink.

11. An article comprising a medium storing instructions that enable a processor-based system to:

detect the coupling of a power sink to a power source;

request a power class indication from the power sink; and

determine whether the available power on said source is sufficient to supply the power needs of said power sink.

12. The article of claim 11 further storing instructions that enable the processor-based system to detect a coupling of a plurality of power sinks to the power source and send the data signal between the source and each sink to determine whether the source can provide power to each sink.

13. The article of claim 11 further storing instructions that enable the processor-based system to receive a self-identifier packet from the sink.

15. The article of claim 11 further storing instructions that enable the processor-based system to receive a power class indication from the sink.

16. The article of claim 11 further storing instructions that enable the processor-based system to determine its available power based on the power requirements of a sink.

17. The article of claim 11 further storing instructions that enable the processor-based system to determine whether to supply power to a given sink based on the power requirements of sinks already coupled to the source and the power capacity of said source.

18. The article of claim 12 further storing instructions that enable the processor-based system to supply sufficient power for enumeration to any sink coupled to said source.

19. The article of claim 18 further storing instructions that enable the processor-based system, if the source is unable to apply power to the sink, to refuse to supply power to the sink except for enumeration.

20. The article of claim 11 further storing instructions that enable the processor-based system to use an identifier from a sink to determine whether the source can supply power to the sink.

21. A system comprising:

a connection to a source of power;

a plurality of ports to couple said system to power consuming devices; and

a processor-based device which analyzes power class information received from power consuming devices and automatically determines whether to supply power to said power consuming devices through said ports.

22. The system of claim 21 wherein said system includes a fan out physical layer.

23. The system of claim 21 wherein said system includes an AC adapter.

24. The system of claim 21 wherein said processor-based device determines whether to provide power to a power consuming device that is connected to said system.

25. The system of claim 24 wherein said system provides power to the power consuming device for enumeration and then determines whether to provide additional power to said power consuming device.

26. A system comprising:

power consuming circuitry;

a processor-based device; and

a port connectable to receive power from a power source and to provide automatically power class information to said power source.

27. The system of claim 26 wherein said system is a mobile computer system.

28. The system of claim 26 wherein said system includes a physical layer integrated with a link layer.

29. The system of claim 26 wherein said system includes a data plug.

30. The system of claim 26 wherein said device generates a self-ID packet that indicates the power needs of said system.